U.S. Department of the Interior • U.S. Geological Survey

MINERAL INDUSTRY SURVEYS

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VANADIUM IN AUGUST 1996

The total reported consumption of vanadium in August increased by about 34 percent from consumption in July, according to the U.S. Geological Survey. Increases in consumption ranged from a few percent for the stainless and heat-resisting end use category to more than 68 percent for the carbon steel end use category. Consumption in the full alloy end use category was up by 35 percent. Total consumption in July was down by more than 40 percent from the previous month. However, the last several months have seen a steady increase in demand for vanadium. The increase in consumption in the carbon end use category has been driven by increased demand for structural steels. Also, industrial production, an indicator of demand for steel and vanadium, is higher than it was in the first 6 months of 1995. Total consumption in August was 398 metric tons, about 12 percent more than consumption in August 1995. The year-to-date consumption on August 31, 1996, was 3,050 tons, about 10 percent more than consumption for the same period in 1995.

Vanadium pentoxide recovery from Orimulsion planned

A German plant that recovers vanadium pentoxide from fly ash will open in 1997. The plant at Hennstedt, near the Danish border, will recover 2,000 tons of vanadium pentoxide, 250 tons of nickel, and 14,000 tons of magnesium sulfate a year. The metals will be recovered from ash produced at a powerplant in Denmark that imports 1 to 1.5 million tons of Venezuelan Orimulsion a year. The recovery plant will be owned by a joint venture in which Bitor Energy, which markets Orimulsion, has a 45 percent stake; Reakt of the United Kingdom will have 10 percent; and Strategic Minerals Corp. (Stratcor), a U.S. producer of vanadium, 45 percent. There are plans for Britain to import 4 to 5 million tons of Orimulsion a year to be burned at a powerplant in Pembroke, South Wales, depending on government approval. Following government approval, another metals recovery plant might eventually be built at Pembroke.[1]

Orimulsion consists of heavy crude oil mixed with 30 percent water. Venezuela plans to increase production of Orimulsion from 4.8 million tons in 1996 to 20 million tons by 2000.

[1]Financial Times, Jul. 5, 1996, p. 28.

Prepared by the Metals Section and the Data Collection and Coordination Section, October 23, 1996.

TABLE 1
U.S. CONSUMPTION AND CONSUMER STOCKS OF VANADIUM, BY FORM, IN 1996 1/

(Kilograms, contained vanadium)

	July		August	
	Consumption	Stocks	Consumption	Stocks
Ferrovanadium 2/	268,000 r/	377,000 r/	365,000	346,000
Oxide	1,120	6,610	1,120	6,610
Vanadium-aluminum alloy	W	9,760 r/	W	9,770
Vanadium chemicals 3/	W	W	W	W
Other 4/	29,600	6,330	31,400	5,430
Total	298,000 r/	399,000 r/	398,000	368,000

r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other."
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Includes other vanadium-iron-carbon alloys as well as vanadium oxides added directly to steel.
3/ Includes vanadates, chlorides and other specialty chemicals.
4/ Includes other vanadium alloys, vanadium metal, and items indicated by symbol "W."

TABLE 2
U.S. CONSUMPTION OF VANADIUM, BY END USE 1/

(Kilograms, contained vanadium)

		1996		
	1995	July	August	Year to date p/ 2/
Steel:				
Carbon	1,870,000 r/	97,800	165,000	1,150,000
Stainless and heat-resisting	31,800 r/	1,620 r/	1,660	14,900
Full alloy	833,000 r/	67,900 r/	92,000	755,000
High-strength low-alloy	1,070,000 r/	70,500	71,100	605,000
Tool	443,000 r/	27,400	32,600	248,000
Unspecified	W	--	--	--
Total steel	4,240,000 r/	265,000 r/	363,000	2,780,000
Cast irons	39,600	W	W	W
Superalloys	20,400 r/	1,330 r/	1,490	11,600
Alloys (excluding steels and superalloys):				
Cutting and wear-resistant materials	271 r/	20	20	163
Welding and alloy hard-facing rods and materials	3,440	W	W	W
Nonferrous alloys	W	W	W	W
Other alloys 3/	307,000	W	W	W
Chemical and ceramic uses:				
Catalysts	W	W	W	W
Other 4/	W	W	W	W
Miscellaneous and unspecified	20,200 r/	31,800	33,800	261,000
Total consumption	4,640,000 r/	298,000 r/	398,000	3,050,000

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Miscellaneous and unspecified."
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ May include revisions to previous months' data.
3/ Includes magnetic alloys.
4/ Includes pigments.

TABLE 3
U. S. EXPORTS OF ALUMINUM-VANADIUM MASTER ALLOY, FERROVANADIUM, OXIDES
AND HYDROXIDES OF VANADIUM, AND VANADIUM METAL IN JULY 1996 1/

(Kilograms, vanadium content unless otherwise specified)

Material and country	Quantity	Value	Year to date p/ Quantity	Year to date p/ Value
Aluminum-vanadium master alloy: 2/				
Argentina	--	--	1,080	$14,000
Australia	--	--	499	6,380
Austria	--	--	3,540	36,700
Canada	--	--	79,600	968,000
Chile	--	--	770	10,000
Germany	--	--	902	13,400
Ireland	416	$5,410	597	10,000
Japan	102	2,570	9,580	164,000
Korea, Republic of	--	--	3,270	42,500
Malaysia	--	--	897	11,700
Mexico	2,430	31,600	22,200	295,000
Philippines	409	5,310	409	5,310
Russia	15,200	274,000	15,200	274,000
Suriname	--	--	139	6,460
Switzerland	571	7,420	571	7,420
United Kingdom	7,420	137,000	29,300	519,000
Venezuela	--	--	3,810	49,600
Total	26,500	463,000	172,000	2,430,000
Ferrovanadium:				
Australia	--	--	546	6,830
Canada	21,500	426,000	171,000	3,050,000
Mexico	2,130	71,000	99,000	1,900,000
Venezuela	--	--	2,300	76,800
Total	23,600	497,000	273,000	5,040,000
Vanadium pentoxide (anhydride): 3/				
Italy	7,970	70,700	81,900	654,000
Japan	--	--	13,800	126,000
Kuwait	--	--	4,970	34,300
Pakistan	--	--	6,040	83,600
Taiwan	632	6,000	632	6,000
United Kingdom	--	--	40,100	331,000
Total	8,600	76,700	147,000	1,230,000
Other oxides and hydroxides of vanadium:				
Australia	--	--	675	6,000
Canada	27,500	217,000	153,000	1,090,000
France	--	--	15,200	128,000
Germany	--	--	6,290	67,300
Italy	--	--	17,200	137,000
Japan	--	--	100	3,610
Russia	--	--	12,300	110,000
South Africa	41,100	323,000	61,100	474,000
Spain	--	--	2,210,000	9,030,000
Switzerland	6,880	37,100	13,800	74,100
Total	75,500	577,000	2,490,000	11,100,000
Vanadium metal, including waste and scrap: 2/				
Australia	--	--	2,320	92,000
Canada	--	--	1,470	39,200
Germany	--	--	636	18,100
Taiwan	--	--	131	11,900
United Kingdom	2	4,810	84,600	560,000
Total	2	4,810	89,100	721,000

p/ Preliminary.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ Gross weight.
3/ May include catalysts containing vanadium pentoxide.

Source: Bureau of the Census.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF ALUMINUM-VANADIUM MASTER ALLOY,
FERROVANADIUM, OXIDES AND HYDROXIDES OF VANADIUM, AND VANADIUM METAL IN JULY 1996 1/

(Kilograms, vanadium content unless otherwise specified)

Material and country	Quantity	Value	Year to date p/ 2/ Quantity	Year to date p/ 2/ Value
Aluminum-vanadium master alloy: 3/				
Germany	113	$5,310	1,500	$11,500
Ferrovanadium:				
Austria	--	--	27,300	430,000
Belgium	--	--	62,700	947,000
Canada	53,300	847,000	348,000	5,350,000
China	--	--	23,200	318,000
Czech Republic	44,200	627,000	306,000	4,250,000
Germany	--	--	2,690	32,300
Russia	18,700	448,000	51,900	1,060,000
South Africa	16,300	244,000	124,000	1,880,000
Tajikistan	--	--	40,500	626,000
Total	133,000	2,170,000	986,000	14,900,000
Vanadium pentoxide (anhydride): 4/				
China	--	--	40,800	329,000
France	335 5/	28,800 5/	10,200	252,000
Germany	--	--	427	18,100
South Africa	30,700	381,000	228,000	2,840,000
United Kingdom	4 5/	27,200 5/	4	27,200
Total	31,100	437,000	280,000	3,470,000
Other oxides and hydroxides of vanadium:				
France	--	--	304	48,600
Germany	--	--	1	2,610
United Kingdom	--	--	6,030	76,000
Total	--	--	6,340	127,000
Vanadium metal, including waste and scrap: 3/				
France	--	--	90	8,500
Germany	--	--	19,600	396,000
Russia	--	--	1,140	50,300
United Kingdom	--	--	1	4,220
Total	--	--	20,800	459,000

p/ Preliminary.
1/ Data are rounded to three significant digits; may not add to totals shown.
2/ May include revisions to previous months' data.
3/ Gross weight.
4/ May include catalysts containing vanadium pentoxide.
5/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census.

TABLE 5

U.S. IMPORTS FOR CONSUMPTION OF VANADIUM-BEARING
ASH, SLAG AND RESIDUES IN JULY 1996 1/

(Kilograms, vanadium pentoxide content)

Material and country	Quantity	Value	Year to date p/ Quantity	Year to date p/ Value
Ash and residues:				
Canada	46,600	$116,000	113,000	$393,000
Mexico	55,300	133,000	227,000	1,130,000
Netherlands	--	--	7,760	2,670
Netherlands Antilles	--	--	87,900	168,000
Portugal	--	--	7,130	6,470
United Kingdom	--	--	14,800	3,260
Total	102,000	249,000	457,000	1,700,000
Ash and residues (not from the manufacture of iron and steel):				
Canada	139,000	28,800 2/	904,000	206,000
Slag, from the manufacture of iron and steel:				
South Africa	--	--	588,000	2,290,000
Other residues: (Not advanced in value)	--	--	--	--

p/ Preliminary.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census.

TABLE 6

U.S. IMPORTS FOR CONSUMPTION OF MISCELLANEOUS
VANADIUM CHEMICALS IN JULY 1996 1/

(Kilograms, vanadium content)

Material and country	Quantity	Value	Year to date p/ 2/ Quantity	Year to date p/ 2/ Value
Sulfates:				
India	--	--	25	$14,900
Vanadates:				
Germany	95 3/	$1,940	3,340	72,700
South Africa	22,600	159,000	46,200	319,000
Switzerland	99 3/	1,260	99	1,260
Total	22,800	162,000	49,600	393,000
Hydrides and nitrides:				
South Africa	--	--	255,000	4,630,000

p/ Preliminary.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include revisions to previous months' data.

3/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census.